

Facilitating Early Literacy Development

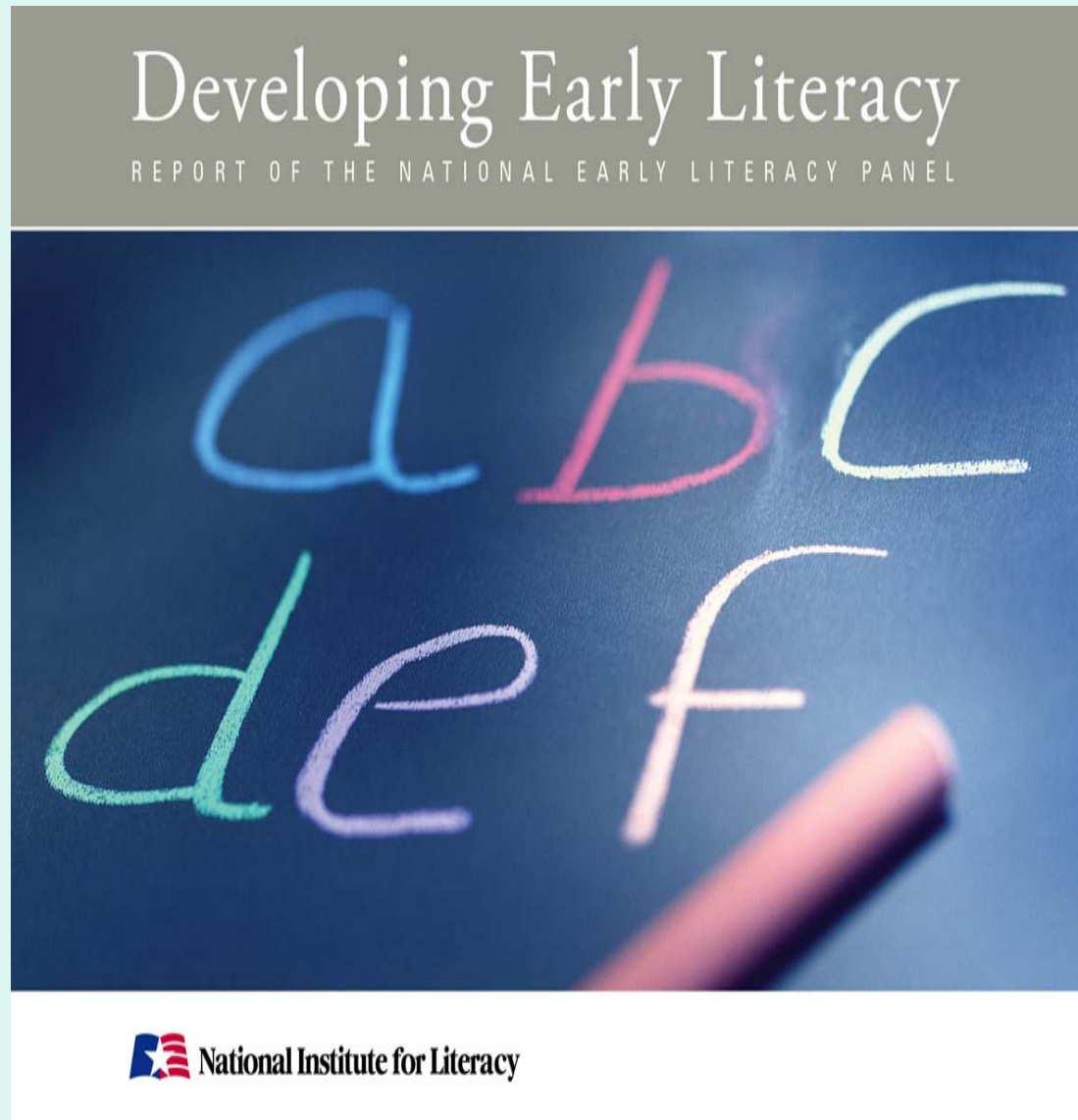
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Lighting Pathways to Literacy

**A Partnership Conference of
Early Reading First, Long Island Regional School Support Center, and Eastern
Suffolk BOCES**

July 1, 2010

Report of the National Early Literacy Panel (NELP)

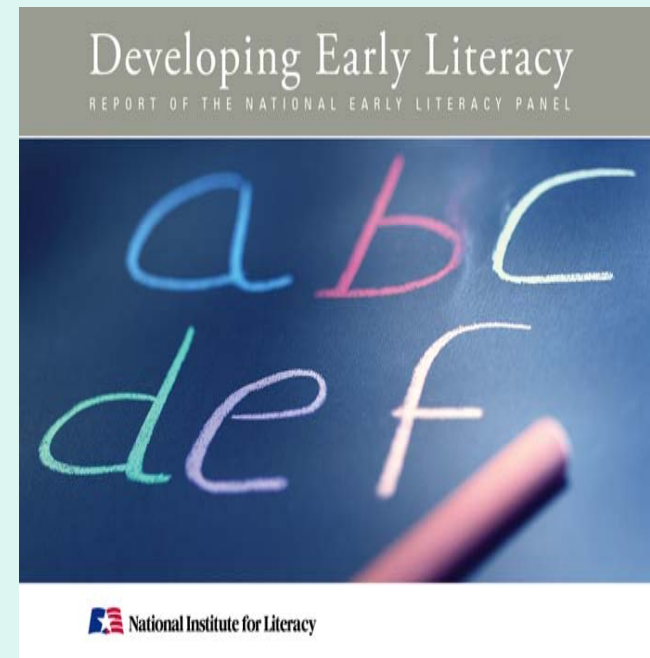


Report of the National Early Literacy Panel

- **A research synthesis**
- **Improve future reading achievement**
- **Contribute to**
 - **educational policy and practice decisions**
 - **creation of literacy-specific materials for parents, teachers, and family-literacy practitioners**

Facilitating Early Literacy Development

1. **Developmental Literacy**
2. **Report of the National Early Literacy Panel**
3. **Research on Preschool Curricula, Early Literacy and Related Skills**



Developmental Literacy

Elementary School

“Conventional literacy skills”... Decoding, Oral reading fluency, Reading comprehension, Writing, Spelling

Four- & five-year-olds

Letter Knowledge, Letter-sound correspondence

Phonological Awareness

Print knowledge, Emergent writing

Two- & three year-olds

Vocabulary and concepts, Book knowledge,

Narrative understanding

Infants and toddlers

Emotional bonding, Pleasure in book interactions,

Sound of parents' voice

A verbal environment ...of labels & meaning,

Engagement



Conventional vs. Early

- Decoding
- Reading comprehension
- Spelling
- Writing

- ✓ Elementary & secondary
- ✓ More sophisticated
- ✓ Mature
- ✓ Later-developing

✓ (NRP Report)

- Emergent
- Precursor
- Foundational
- Predictive

- ✓ Birth to 5 or K
- ✓ “Readiness” skills
- ✓ Essential early skills or abilities relevant to later (conventional) literacy skills

✓ (NELP Report)

Developmental Literacy: Readiness & Success

Health

Cognitive Skills

Social and Behavioral Skills

Family Literacy/Reading Behavior



Why is Reading Important?

- **Opportunities for pleasure, employment, self-knowledge**
- **Millions of adults in U.S. cannot read well enough to understand a brief news article**
- **33% of 4th graders nationally cannot read at the basic level**

What is Hard about Reading?

- Alphabet principle



- Deep orthography in English
- Processing demands on phonological memory
- “Outside” knowledge
- Instructional confusion

Alphabetic principle:

Minimal units of written language (letters)
refer to minimal units of spoken language
(phonemes), or sounds in spoken words...

Letters refer to sounds

Dick, Jane & Sally (Scott Foresman and Co.)

(There are graphemes with multiple
sounds... George, Garth, & Thomas)

*Code-focused instruction
helps teach the alphabetic
principle*

“H”

Deep Orthography in English

OOZE

SNOOZE

CHILD

CHILDREN

BROTH

BROTHER

“Hints on Pronunciation for Foreigners”

...

**A moth is not a moth in mother
Nor both in bother, broth in brother,
And here is not a match for there
Nor dear and fear for bear and pear...**

**And cork and work and card and ward,
And font and front and word and sword...**

From a letter published in the London Sunday Times, 1/3/1965,
Cited by Chomsky (1970) and Adams, M. *Beginning to Read*, 1990

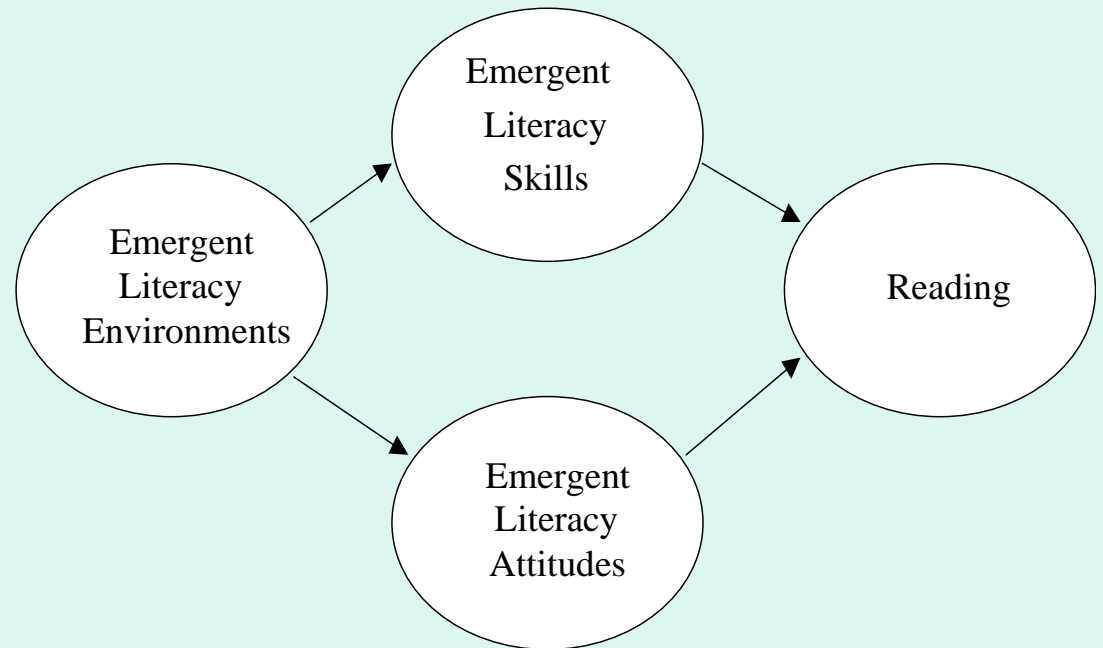
Processing demands on phonological memory

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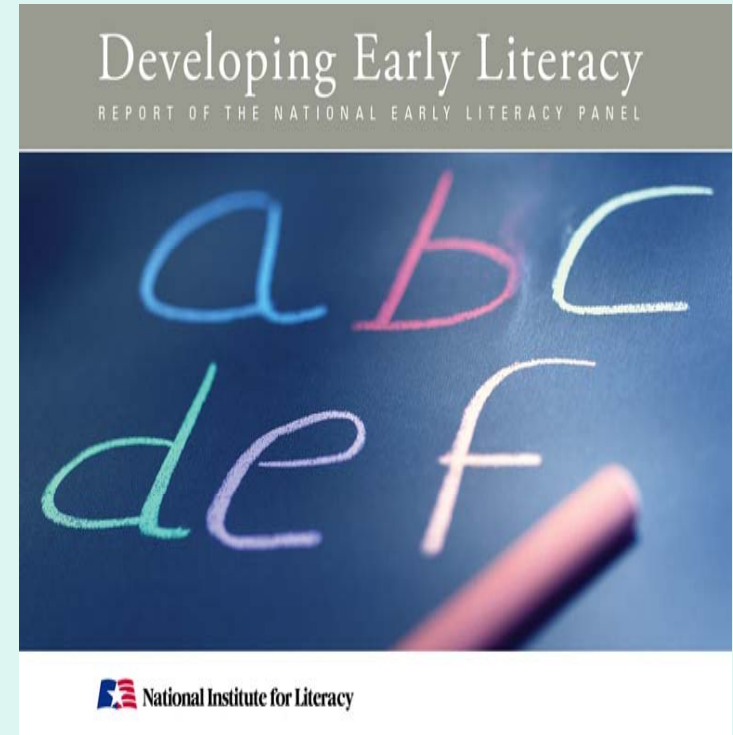
“Outside” knowledge

- World knowledge, content and cultural knowledge
- Experience
- Context
- Lead balloon / Lead the way

Instructional confusion



1. **Developmental Literacy**
2. **Report of the National Early Literacy Panel with Implications for Service and Policy**
3. **Research on Preschool Curricula & Early Literacy Skills**



Introduction



Timothy Shanahan, U of Illinois Chicago, Panel Chair

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The National Early Literacy Panel project was coordinated by

Laura Westberg at the *National Center for Family Literacy (NCFL)*,



Funded by:

National Institute for Literacy

Coordinated by:

National Center for Family Literacy

In consultation with:

DHHS / National Institute for Child Health and
Human Development
U.S. Department of Education

Research Questions



1. What are the skills and abilities of young children (age birth through 5 years or kindergarten) that predict later reading, writing, or spelling outcomes? **[*What early and emerging skills, or pre-reader skills predict later (conventional) literacy skills?*]**
2. Which programs, interventions, and other instructional approaches or procedures have contributed to or inhibited gains in children's skills and abilities (birth to 5 years or K) that are linked to later outcomes in reading, writing, or spelling?
3. What environments and settings have contributed to or inhibited gains in children's skills and abilities that are linked to later outcomes in reading, writing, or spelling?
4. What child characteristics have contributed to or inhibited gains in children's skills and abilities that are linked to later outcomes in reading, writing, or spelling?



What meaningful skills (birth to 5 or K) precede and predict the domains of conventional literacy?

- Decoding or “cracking the code”
- Reading comprehension
- Spelling
- Writing

What precedes these?



- Conduct literature searches for *studies including early skills and later reading skills*, to identify predictor skills, or generate a list of potential predictor skills
- Carefully identify these predictor skills, or early literacy skills
- What are the interventions that support the development of these predictor skills?



Original Search for the Links: Broad, Focused, and Thorough

- ✓ Search terms:
 - 9 categories of early-language / literacy-related terms (284 key terms)

 - 2 more categories for age group and literacy outcomes (67 terms)

- ✓ Identified as many records as possible from 2003 and prior (7,313 records)
 - ERIC, PsycINFO, reference lists of studies, current journals, experts

Study Selection



- Published in English
- Published in a refereed journal
- Empirical research w/ quantitative data on groups of children
- Languages studied included alphabetic languages
- Included children between the ages of 0 and 5 or kindergarten children



Final set of 234 studies identified that involved a skill or ability measured at birth-to 5 or K, and statistically linked to a reading, writing, or spelling outcome measured at the conclusion of K or any time later (usually through a correlational procedure).

MEASURE

Birth – Beg. K



MEASURE

End of K and Later



Prediction of Decoding



Predictor (0-5 or K)	Average r	N of studies	N of children
Decoding nonwords	.72	8	763
Spelling	.60	7	1,184
Invented spelling	.58	10	778
Reading NOS	.57	3	1,739
Decoding NOS	.53	5	877
Decoding words	.52	21	4,121
Reading comprehension	.52	5	700
ABC knowledge	.50	52	7,570
Readiness	.50	5	1,988
Writing/writing name	.49	10	1,650
Arithmetic	.45	14	3,929
IQ	.45	13	2,015
Phonological awareness	.40	69	8,443

Prediction of Decoding (cont.)



Predictor	Average r	N of studies	N of children
RAN letters/digits	.40	12	2,081
Concepts about print	.34	12	2,604
Oral language	.33	63	9,358
RAN objects/colors	.32	16	3,100
Phonological NOS	.31	3	174
Performance IQ	.30	15	2,792
Print awareness	.29	6	683
Environmental print	.28	6	1,042
Phonological STM	.26	33	4,863
Visual motor	.25	14	1,316
Visual memory	.22	8	1,708
Visual perception	.22	16	2,551

Prediction of Comprehension



Predictor	Average r	N of studies	N of children
Readiness	.59	3	348
Concepts about print	.54	3	535
ABC knowledge	.48	17	2,038
Print awareness	.48	4	347
Phonological awareness	.44	20	2,461
RAN letters/digits	.43	3	333
RAN objects/colors	.42	6	1,146
Decoding nonwords	.41	3	282
Decoding words	.40	6	1,091
Phonological STM	.39	13	1,911

Prediction of Comprehension (cont.)



Predictor	Average r	N of studies	N of children
Arithmetic	.35	8	1,197
Performance IQ	.34	5	253
Oral language	.33	30	4,015
Writing/writing name	.33	4	565
Visual perception	.26	9	1,438
Visual motor	.22	9	1,333
Concept knowledge	.20	3	873
Visual memory	.17	5	875

Prediction of Spelling



Predictor	Average r	N of studies	N of children
Spelling	.78	4	398
Invented spelling	.69	3	354
ABC knowledge	.54	18	2,619
Decoding nonwords	.54	3	246
Decoding words	.54	6	1,112
IQ	.54	3	142
Arithmetic	.50	3	203
Visual perception	.44	5	548
Concepts about print	.43	4	534
PA (...and further)	.40	21	2,522

Identifying Emergent Literacy Skills



Several variables have moderate to strong relations with later conventional literacy outcomes in a large number of studies with a relatively large number of children

These relations are sizable, reliable, and stable

Identifying Emergent Literacy Skills



- Is the contribution of a variable unique?
- Greater confidence of the importance of a variable if that variable contributed *unique predictive variance* to an outcome once other important variables were controlled.



Examination of multivariate studies indicates that several of these predictors provide *independent predictive information* even when measured within the context of other variables.

Summary of correlational analyses with at least a *moderate* zero-order relationship with at least one conventional literacy outcome

0 to 0.29 = small

0.30 to 0.40 = *moderate*

≥ 0.50 = strong

Summary of Correlational Analyses



Predictor Variable	Decoding	Reading Comprehension	Spelling	Multivariate Significance
Alphabet Knowledge	++	+	++	Yes
Phonological Awareness	+	+	+	Yes
Concepts About Print	+	++	+	Sometimes
RAN Letters/Digits	+	+	NA	Yes
RAN Objects/Colors	+	+	+	Yes
Writing/Writing Name	+	+	+	Yes
Oral Language	+	+	+	Sometimes
Phonological STM	--	+	+	Yes
Visual Perceptual	--	--	+	No
Print Awareness	--	+	NA	NA



Six early literacy skills are *strong to moderate* predictors of later conventional literacy (and continue to be predictive when other variables were controlled in multivariate analyses):

- **Alphabet Knowledge**
- **Phonological Awareness**
- **RAN (Rapid Automatic Naming/Lexical Access) of letters and digits**
- **RAN of objects and colors**
- **Writing or Writing Name**
- **Phonological short term memory**

Identifying Emergent Literacy Skills



- Alphabet Knowledge – knowledge of names and sounds associated with printed letters
- Phonological Awareness – ability to detect, manipulate, or analyze the auditory aspects of spoken language (e.g., word or syllable or phoneme segmenting)
- RAN (Rapid Automatic Naming/Lexical Access) of letters and digits – rapidly name a sequence of random letters or digits
- RAN of objects and colors – as above, with pictures of objects or colors
- Writing or Writing Name – writing letters in isolation or one's name
- Phonological short term memory – remember spoken information for a short period of time



Five more skills that correlated moderately with at least one conventional literacy skill:

- Concepts about print
- Print knowledge
- Reading readiness
- Oral language
- Visual processing

Smaller effect, weakly related, or no current evidence of predictive relationship, few studies, few children

- Visual skills
- Environmental print

Identifying Emergent Literacy Skills



- Concepts about print – knowledge of print conventions (e.g., left to right, front-back) and concepts (book cover, author, text)
- Print knowledge – combination of elements of alphabet knowledge, concepts about print and early decoding
- Reading readiness – usually a combination of AK, Concepts of print, vocabulary memory and PA
- Oral language – ability to produce or comprehend spoken language, including vocabulary and grammar
- Visual processing – ability to match or discriminate visually presented symbols



Nuances of Importance

Secondary analyses that afforded a finer-grained evaluation of some of the predictor variables:

Oral language

Does definition of oral language matter?



- Oral language – did not hold up as a predictor when other variables are controlled for
- An unexpected result, especially the relatively weak relationship between oral language and reading comprehension
- *What parts of oral language are examined matters a lot (e.g., vocabulary, listening comprehension, syntax)*
- More complex skills of oral language, like grammar, definitional vocabulary, listening comprehension – had significantly stronger relationships with conventional literacy skills (decoding and reading comprehension)

Does definition of oral language matter?



- The results should not be taken to imply that well-developed vocabularies are *unimportant* for literacy
- More likely, well-developed vocabularies are *insufficient* for literacy; That is, building vocabulary alone is unlikely to be enough for improving outcomes in literacy



Birth to Five or K...

- Searched broadly for all interventions that measured the emergent literacy skills identified as predictors of later reading outcomes
- Over 900 articles were retrieved and reviewed by panelists
- Articles meeting criteria were categorized by intervention type



Birth to 5 or K : Five Categories

Category 1: Code-focused Interventions (n = 78)

Helping Children Make Sense of Print--Cracking the Alphabetic Code and Teaching Letters and Words (Letter Knowledge, Spelling, Phonics, most studies included PA instruction)

Category 2: Shared-reading Interventions (n = 19)

Interventions involving reading books to children; interventions of simple shared reading and those that encouraged various forms of reader-child interactions around the material being read



Category 3: Parent and Home Programs (n = 32)

Interventions using parents as agents of intervention; may have involved teaching parents instructional techniques to use with their children at home to stimulate children's linguistic or cognitive development

Category 4: Preschool and Kindergarten Programs

(n = 33) Studies evaluating any aspect of a preschool or K program. Ten studies in this category concerned one particular intervention (the Abecedarian Project). Other studies evaluated effects of educational programs, curricula, or policies such as extended-year experience, on kindergartners.



Birth to 5 or K Five Categories

- **Category 5: Language-enhancement Interventions**
(n = 28) Studies examining effectiveness of an instructional effort aimed at improving young children's language development



- The unit of analysis was the effect sizes obtained from independent groups
- Minimum of 3 studies must contribute to effect size estimate
- Additional comparisons were conducted to determine variations in interventions

Instructional Practices That Enhance Early Literacy Skills



- Code-focused interventions*** significant and moderate to large effects across a broad spectrum of early literacy outcomes; positive effects directly on children's conventional literacy skills
- Book-sharing interventions: significant and moderate-sized effects on children's print knowledge and oral language skill
- Home and parent programs: significant and positive impact both on young children's oral language skills and general cognitive abilities
- Preschool and K programs: significant and moderate to large effects on spelling and reading readiness
- Language-enhancement interventions: significant and moderate-sized effects on children's oral language skills
- *Precursor skills with causal instructional evidence: ABC's, PA and Oral Language*



Instructional Practices That Enhance Early Literacy Skills



- Many things that parents and preschools can do to improve the literacy development of their young children
- Different approaches influence the development of a different pattern of essential skills
 - Did the environments or settings contribute?
 - Did child characteristics contribute?



- Importance of age appropriate interventions
- Younger vs. older children (in the birth to 5 range)
 - Only in the **language interventions** -- greater effectiveness earlier (younger than 3 years, 4 studies vs. 3.5 to 5 years, 15 studies)
 - Intervening earlier versus later is advantageous for enhancing children’s language development
 - Otherwise, age-level comparisons, when possible, did not differentiate intervention effectiveness



- Interventions that produced large and positive effects on children's code-related skills and conventional literacy skills were usually ...
 - Done individually or in small group
 - Done in teacher-directed contexts
 - Engaged the child in using the skills
 - Included **PA intervention** (detect, manipulate)
 - Even better, **PA plus alphabet** (names or sounds) or **simple phonics tasks**
- Few used rhymes as a primary teaching approach
- Age/developmental level made no difference in the benefits of this kind of teaching, but what was taught varied (larger to smaller units)



- Systematic, explicit, intentional, many opportunities for practice

Model blending and deleting sounds
(synthesis & analysis)

- Starting with larger units and shifting to smaller
 - ✓ cowboy – toothbrush – football
 - ✓ to similar onset sounds – which 2 words begin with the same sound (boy, ball, cat -- boy, ball, tall)
 - ✓ to breaking apart ... basket = /bas/ +/ket/
 - ✓ deleting sounds, such as deleting the /k/ in *clip* leaves *lip*

Language-enhancement Interventions



- Variety of interventions in the studies to teach oral language skills
- Usually in small group format
- Interventions delivered by teachers, parents, clinicians, graduate students, home visitors
- Like code-related interventions, no difference in impact on characteristics of language enhancement re characteristics of SES, ethnicity, or population density
- No difference in impact between children who had language impairments and those who did not
- No difference in: impact by agent (parent vs. teacher), if intervention was play-based or not, if intervention required a child to respond vs. those that did not have this feedback requirement

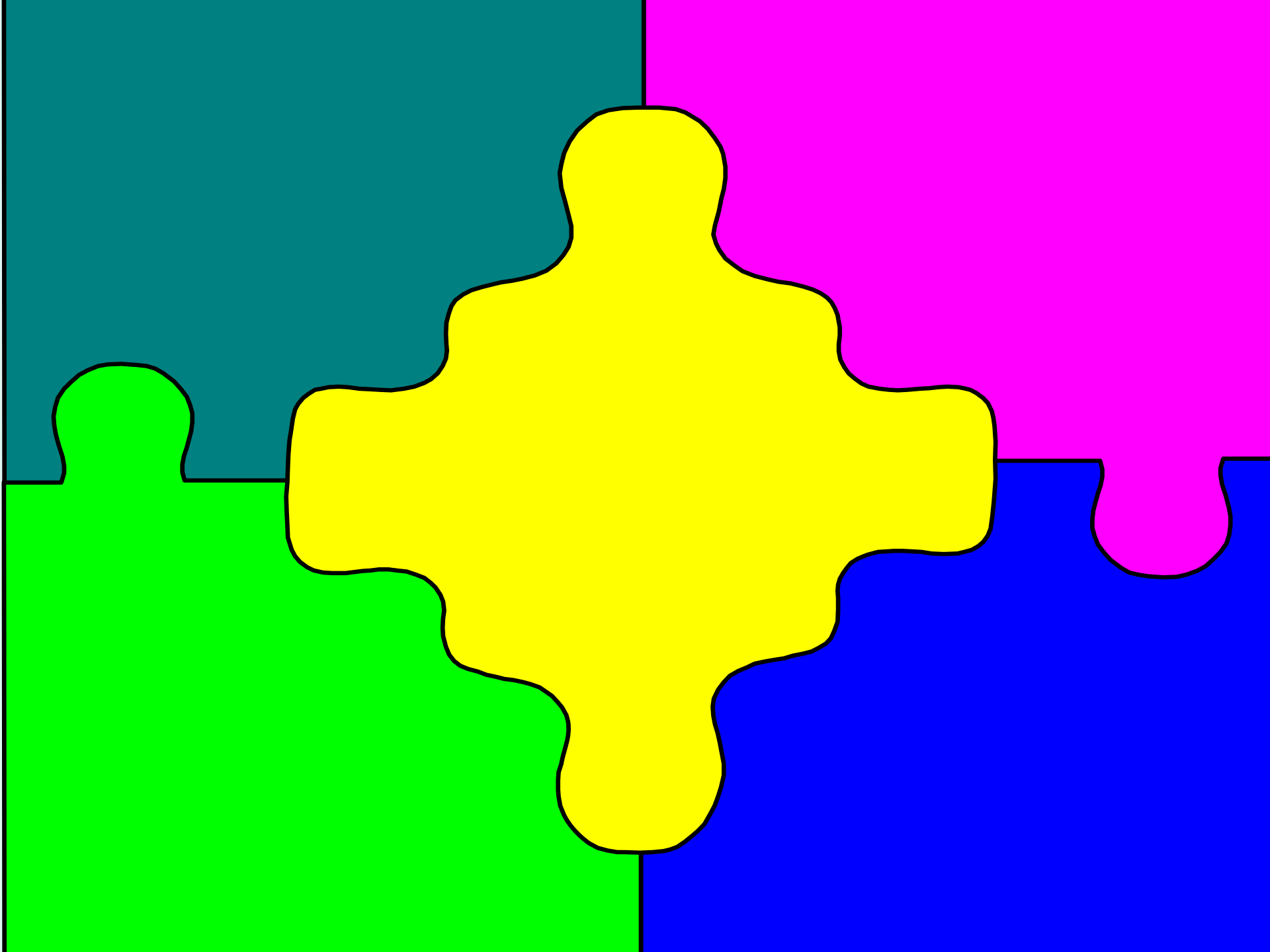


- Sharing books with young children had moderate effects on **oral language skills and print knowledge**
- No studies provided evidence that shared reading *by itself* is sufficient for promoting children's later conventional literacy skills, including their reading ability. So combinations of instructional practices may provide greatest impact

Reading to Children (Shared Reading)

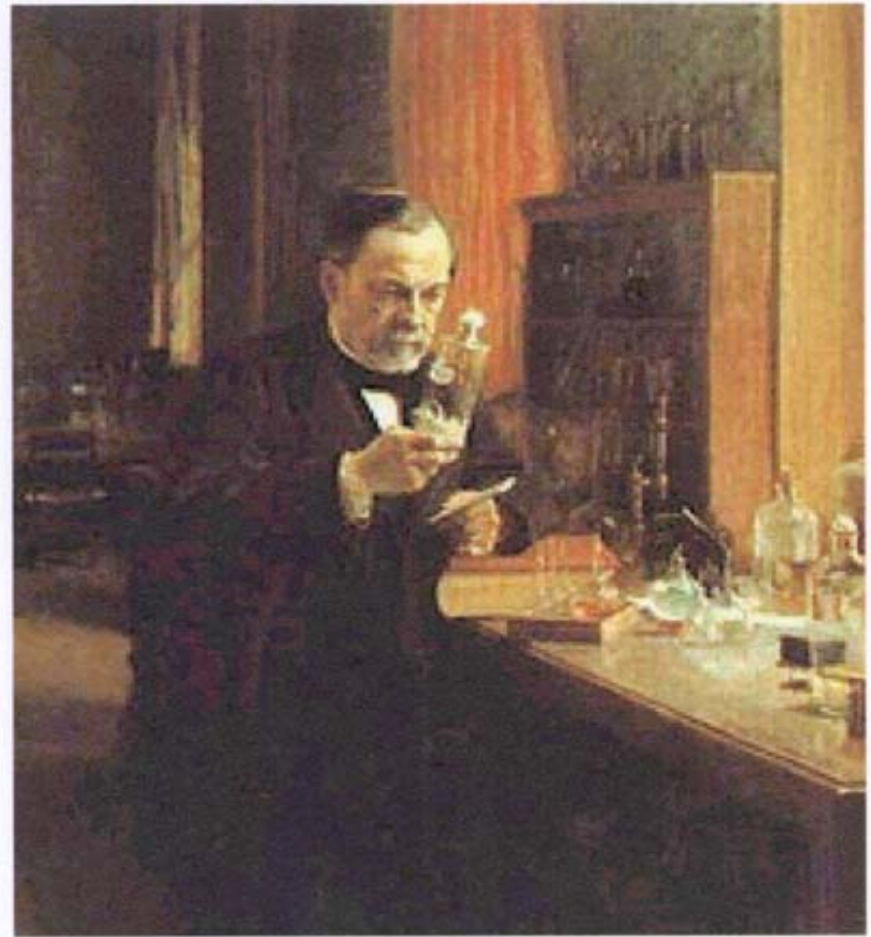


- Biggest impacts were derived from **dialogic reading/ interactive reading**, as opposed to just reading





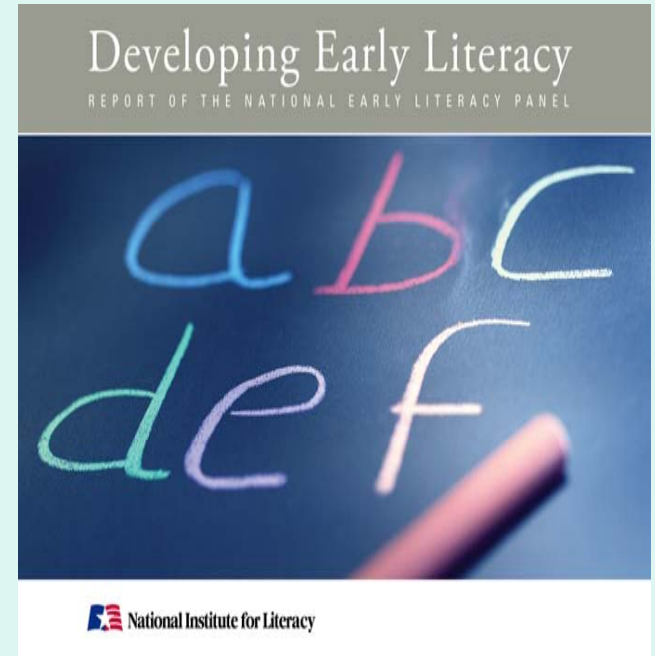
- Variation in quality of studies –
 - a basic premise of meta-analysis is that all studies on a particular issue are unlikely to suffer the same problems
- Only published studies included
- In many areas, pressing questions, missing data to inform:
 - Is there benefit to adopting specific approaches to teaching in language interventions (e.g., direct instruction, naturalistic, or milieu-based interventions)
 - Does outcome differ as a function of intensity of intervention (freq per week, group size)?
 - Can we comment on the effectiveness of specific curricula developed for the birth-to-five population?

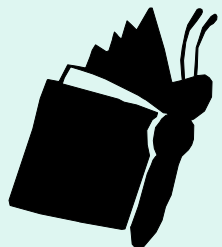


“In the fields of observation chance favors only the prepared mind.”

Louis Pasteur (1822-1895)

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Evidence-based Curriculum Approaches for Head Start

HHS/ACF Quality Research Center Project 2001-2007

- To identify through careful comparative methods, curriculum approaches that provide effective enhancement of emergent literacy skills for children in Head Start
- Random assignment of f/d classrooms (35)
- Pre- and post-test child assessments
- Emergent literacy intervention curricula (added to the High/Scope method)

Study Curricula

Let's Begin with the Letter People®:

This approach: emergent literacy focused/full spectrum/teacher-guided

Waterford Early Reading Program® Level I:

This approach: emergent literacy focused/add-on/one-to-one (computer and child)

Comparison: High/Scope® Educational Approach

The approach used by the HS Grantee – full-spectrum/teacher guided/but not particularly pre-reading skills focused

Significant Early Literacy Outcomes

Mixed Effects ANCOVAs

- Intervention Effects (Fixed) on Child Literacy Outcomes
- Classroom Effects (Random) on Child Literacy Outcomes

Intervention Effects (Fixed) on Child Literacy Outcomes

<u>Measure</u>	<u>F</u>	<u>p</u>	<u>Effect Size (d)</u>
<u>Get Ready to Read! Screen</u>			
LB > Comparison	$F_{(1,20.21)} = 8.21$	$p = .01$	$d = .35$
W > Comparison	$F_{(1,19.69)} = 8.37$	$p = .01$	$d = .24$
<u>Dictation (WJ)</u>			
LB > Comparison	$F_{(1,18.03)} = 8.03$	$p = .01$	$d = .36$
<u>Book Knowledge</u>			
LB > Comparison	$F_{(1,20.32)} = 4.93$	$p = .04$	$d = .38$
<u>Print Concepts</u>			
LB > Comparison	$F_{(1,20.43)} = 4.93$	$p = .04$	$d = .37$
W > Comparison	$F_{(1,20.38)} = 4.18$	$p = .05$	$d = .37$
<u>Letters Known (trend)</u>			
LB > Comparison	$F_{(1,20.63)} = 3.91$	$p = .06$	$d = .39$

Readiness & Success

- **Cognitive Skills** [Journal of Literacy Research, 2007, 39(4), 471-501]
- **Social Skills & Behavior Problems** [NHSA Dialog 2007, 20(2), 109-126]
- **Family Reading Behavior**

Readiness & Success



- **Cognitive Skills**
- **Social and Behavioral Skills**
- **Family Reading Behavior**

Poverty and Academic Achievement

- **Home literacy environment**
- **Variability in family practices within low-income households**

Parent Interview:

Example Parent Responses

- Age when parent first read to child

13%	After 2 yrs
12%	1.5 – 2 yrs
13%	1 – 1.5 yrs
23%	6 mos – 1 yr
39%	Before 6 mos

- Number of books in home for child's use

3%	0-2
21%	3-10
27%	11-20
21%	21-40
28%	>40

Parent Responses to the *Family Reading Survey* - Fall of Head Start Year

Child Reading Interest

how often child asks to be read to, how often child looks at books by h/self, how much child appears to enjoy being read to

Parent Reading Interest

daily duration of parent reading for pleasure, how much parent enjoys reading for pleasure

Parent-Child Reading Interaction

child's age when parent began reading to child, (f) with which parent reads to child, duration of reading sessions, (f) of library visits, number of books in the home for child's use

Contribution of Family Reading Behavior to Children's Early Literacy Skills *in the Fall*

Family demographic effects – entered as Step 0 in regression

The 3 dimensions of **Family Reading Behavior** were then entered stepwise into model ...

Get Ready to Read! Screen:

***Parent Ed, **Child's Age, *Parent-child Reading Interaction**

PPVT-III – Receptive Vocabulary

*****Parent Ed, ***Parent-child Reading Interaction**

Letters Known

*****Child's Age, *Child Reading Interest**

Story & Print Concepts (Book, Print, and Comprehension)

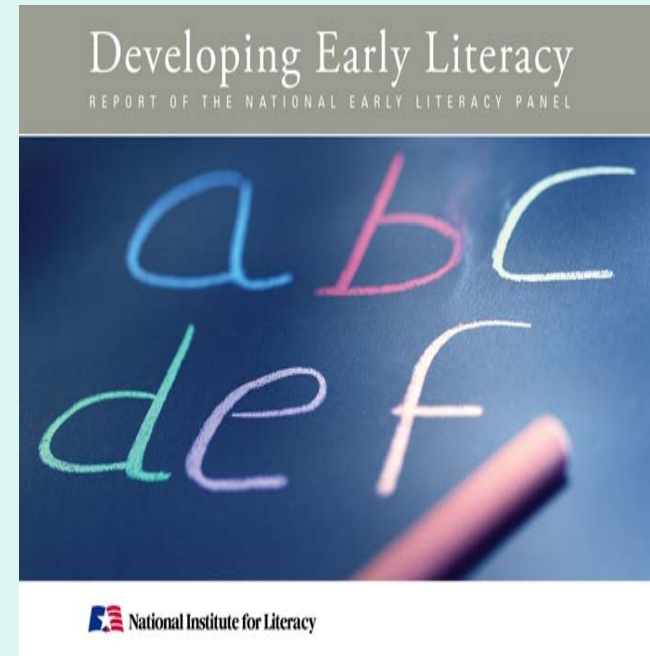
***Parent Ed, ***Child's Age, *Family Size, *** Parent-child Reading Interaction**

Preschool Curriculum Evaluation Research Program (PCER):

Preschool curriculum makes a big difference

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Conclusions & Next Steps

Research provides useful information re important skills to teach to young children, and effective teaching approaches

A rich set of findings about effectiveness of interventions for helping children progress toward successful literacy learning

Need for longitudinal studies with a *wide range of outcomes* measured

Conclusions & Next Steps

Need for a continuum of linked, developmentally appropriate, and effective interventions / curricula

With research monitoring

Need for professional development



Thank you!

National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel*. Washington, DC: National Institute for Literacy

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